INFORMATION LAW SERIES - 4

THE FUTURE OF COPYRIGHT IN A DIGITAL ENVIRONMENT

Proceedings of the Royal Academy Colloquium

organized by the Royal Netherlands Academy of Sciences (KNAW) and the Institute for Information Law

(Amsterdam, 6-7 July 1995)

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P. Bernt Hugenholtz

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Preface

The emerging digital environment is having a profound, and sometimes disturbing, impact on the scope, nature and structure of copyright law. As the Internet experience clearly demonstrates, the new environment raises difficult, but important questions - both from a theoretical and a practical perspective. What is to be the nature and scope of protected rights on the information superhighway? Can existing 'old media' rights survive in the new environment? What copyright exemptions will apply? How to solve conflicts of law in an environment that makes territoriality all but obsolete? What role, if any, will collecting societies play in the electronic future? Will copyright be replaced by technical protection measures and/or direct contractual relationships? Is there a future for copyright in the digital environment?

These were the themes of the Royal Academy Colloquium on The Future of Copyright in a Digital Environment that took place in Amsterdam on July 6-7, 1995. The colloquium was organized by the Royal Netherlands Academy of Sciences (KNAW) and the Institute for Information Law, University of Amsterdam. A group of renowned experts on copyright law and practice was invited to discuss, over a two-day period, the most important copyright problems of the emerging information superhighway. This volume comprises the edited proceedings of the colloquium: fourteen contributions of outstanding quality, an account of the lengthy and lively discussions, and a brilliant summary by Prof. Goldstein.

We wish to express our sincere gratitude to the Royal Netherlands Academy of Sciences (KNAW) for co-organizing and sponsoring the colloquium in the most excellent and generous manner, and for serving as host to the colloquium participants in the wonderful Trippenhuis. Special thanks are due to Manita Kooy and Susi Nap for making it all happen, and to Madeleine de Cock Buning and Jaap Haeck for writing and editing the colloquium minutes. We also wish to thank our other sponsors: the European Commission (DG XIII), Wolters Kluwer Publishers, SDU Publishers, BUMA/STEMRA, and the University of Amsterdam. Last, not least, we are most grateful to the contributors to this volume, and to the other colloquium participants.

The articles in this book appear in the order of the original colloquium programme. Prof. Ginsburg's article, originally published in the Columbia Law Review, was added in a later stage.

The editor wishes to thank Samantha Janssen and Leslie Hugenholtz for their kind assistance in the editing process.

Egbert J. Dommering
P. Bernt Hugenholtz

Institute for Information Law

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Copyright Being Washed Away through the Electronic Sieve. Some Thoughts on the Impending Copyright Crisis

*Egbert J. Dommering**

The economic foundation of copyright has been a subject of much discussion for economists of law. In their treatises, the *raison d'être* of rights is sought in the economic efficiency of subjective rights. These subjective rights are counterproductive at certain times, efficient at others.[1] Other treatises are written in a more sociological vein, describing the slow but steady growth of the family of intellectual property rights as an autonomous process transpiring in the interaction between interested parties and legislative bodies.[2]

In this historical-futuristic treatise I will attempt to take a more macro-economic approach, combined with the role played by technology. At this point in time, it cannot but be an overview of a number of hypotheses, which is why I will not include an extensive list of literature references.

1. The Players: Emergence, Allocation and Exploitation of Rights

In the paper society that did not manifest the characteristics of an information economy, copyright involved a well-delineated group of players and acts of exploitation. I would like to distinguish between works that exist in themselves (books, paintings) and works that only exist when they are performed (music, drama, dance).

1.1 WORKS THAT EXIST IN THEMSELVES

To establish a copyright in the former category, the author creating the work only had to record it onto an irreplaceable information carrier (a manuscript) and take it

* Professor of Information Law, University of Amsterdam; Director, the Institute for Information Law; advocate, Stibbe Simont Monahan Duhot, Amsterdam. This article was previously published in *Computerrecht* 1994, 109-113. Part 3 comprises an account of discussions with Bernt Hugenholtz. The author does, however, take full responsibility for the contents.

1. R. Teijl and R.W. Holzhauer, *De toenemende complexiteit van het intellectuele eigendomsrecht* (The increasing complexity of intellectual property), Arnhem, 1991.
2. *J.H. Spoor, De gestage groei van merk, werk, en uitvinding* (The steady growth of brand, work and invention), Zwolle, 1990.

to a publisher, who would 'wrap' the original, reproduce it as a consumable product (a book) and market it. The market was clear-cut, and the product was priced in relation to a quantifiable turnover with which both parties would obtain a profit margin based on the exploitation rights transferred by the author. Since the publisher played an important role in the distribution of the work, he immediately acquired a position of power over the author. Consequently, publisher's right emerged before author's right.

In painting, this was different. The 'maker' produced a finished, unique, non-reproducible, wrapped (the framing of the picture) product for a wealthy group of insiders with whom he had a direct customer-commission relation, especially in the 15th-19th centuries. He brought the product onto the market himself (shop, customer). Although the publisher function hardly developed here, the art trade started taking on publishing and shop functions at a later stage.

This constellation yielded two properties characteristic of copyright. The owner of the copy of the work was free to do with it what he wanted, as long as this left the author's moral rights intact, i.e., as long as he respected the integrity of the work. Copyright was subservient to the unrestricted individual transfer of knowledge about the work to the work's owner. A second characteristic was that, economically speaking, the price of the copyright in the copy of the work was paid for the moment the copy of the work itself was paid for. This 'exhausted' the copyright and further selling or use of the copy of the work could not be limited pursuant to copyright. Further selling and distribution became the responsibility of printers and booksellers, who, historically, often acted as publishers; later they became independent intermediaries on the buyer's market, as distinct from the publisher.

We will see how these two properties of copyright (exhaustion and unrestricted use by the lawful possessor of the copy of the work) gradually eroded. This development started with the distribution of knowledge that led to the division of the reading market into a buyer's and a lender's market; intermediaries in the latter market included public libraries. In painting, this secondary market did not emerge until the invention of reproduction technology; this resulted in the merger of pictures and text that gave the market for reproduction books its characteristics as a book market. Lending markets for original works appeared as late as the second half of the 20th century, in the form of art lending libraries as part of the government's stimulation policy (the market for originals had proved too inaccessible). A similar merger of pictures and text appeared later for book and film. Books are turned into films, and best-sellers are written with a view to being adapted for the screen. This will start a convergence process of printed and electronic media.

Despite certain differences between the various legal traditions, the relationship between publisher and author had always been one in which the author possessed all rights, which he would partially or wholly transfer to the publisher. This changed with the emergence of the information society, in which business and universities became important organizers of knowledge and creativity. This resulted in the employer's copyright (cf. article 7 of the Dutch Copyright Act), a good example of an economic solution. As explained in Coase's classic 1937 article *The Nature of the Firm*, the company assumes the transaction risk from the

individual (who must sell his work on the free market in which the shares of goods and services are determined by price mechanisms) by employing him for wages (i.e. by internalizing the transaction into the company, as it were) and by integrating, at a permanent, periodical remuneration, the individual performance into a product the company attempts to sell to the market at its own risk.[3]

This solution was more efficient than the individual transaction. It was, of course, also influenced by the development of the technology for the manufacture of complex products that requires individuals with different kinds of expertise. In that respect, employer's copyright ran parallel to the industrial revolution. Universities did not succeed in internalizing the transaction risk, because of past and present objections of principle to employer's copyright[4], which was presumably the upshot of the fact that universities had become lodged between the individual literary copyright tradition and the more business-like exploitation of knowledge.

Universities continued to trade in the intellectual prestige of individuals, which stirred up antagonism between publishers and universities. Universities found out that the authors they employed sold the rights to their works to publishers, which meant that, within the scientific cycle, universities had to pay once again for the (re)use of information that had been generated at their expense in the first place (e.g., royalties for reprographic reproduction, educational uses, lending rights etc.). As a result, universities attempted to commandeer part of the publishing function, a phenomenon clearly manifest in the United States, where each university has its own publishing firm (which subsequently became independent enterprises, but that is a different story).

A great deal more could be said about this development, but I will move on to the second category.

1.2 WORKS THAT EXIST ONLY WHEN PERFORMED

From the outset, the works that only exist when they are performed were distinctive in that they involved a different market mechanism and a different form of exploitation. The producer of the work was an essential link in the exploitation chain. Exploitation required a theatre, a theatre company or orchestra, business managers and artistic leaders, etc. This gave the producers-intermediaries a strong legal position, with their own rights, or rights derived from the author, to exploit the performances. There is a direct line from the position of the theatres to the film rights of film 'makers', who eventually amassed all exploitation rights. Here, too, we see the development toward internalizing the individual authors' transactions within a larger organization, and the transfer of the collective exploitation risk of the work to the producer. Since these works are one-off, the employment relations are only partly suited to realize this transfer, thus requiring transfers linked to specific performances by means of legal assignment (e.g., a film score).

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3. R.H. Coase, 'The Nature of the Firm', in: *The Firm, the market and the law*, Chicago/London, 1988, 33.
4. J.H. Spoor and D.W.F. Verkade, *Auteursrecht* (Copyright), 2d ed., Deventer, 1993, 38-40.

The exhaustion principle has never applied in the area of performance, as the first *Coditel* decision by the European Court of Justice so clearly demonstrated: a performance (*in casu* a film broadcast on television) is not put into circulation to be 'exhausted', but is 'made available to the public by way of the unlimited repeatability of performances.'[5] This has major consequences for the exploitation of works in this branch. If the exploitation proceeds for a single-copy work are obtained by adding up a finite number of copies sold, for a work consisting of an unlimited number of repeatable performances it is necessary to regularly measure and pay for the number of performances.

This has led to the emergence of a different kind of intermediary, the collecting society, which has its own, legally established authority to settle the performances with the performing parties every year. This introduces a different kind of collective efficiency to copyright than the employer's and film author's right. Collective sums of money are settled collectively through contracts with major performers, which sums are transferred to the entitled parties in conformity with certain rough criteria. Because copyright was confronted with the problem of potential massive infringement relatively early in the industrialization process (a large number of illegal performances), the need for a collective form of action arose much earlier than for, e.g., product liability (a different kind of massive injustice generated by industrialized society).

Incidentally, this only holds true for music; theatre performances are apparently sufficiently easy to trace to make individual licensing by rightholders possible. This seems to be true for film as well. It was not until the appearance of the small-scale VCR that the need for collective action arose. Conversely, artists and music producers have become powerful market parties only at a later stage, wanting to keep exploitation away from the musical rights societies. Thus, a process of decollectivization is occurring.

The individual, unrestricted use of works is subject to the same conditions as that of paper information carriers. Only performances in private circles are allowed. In this case, the criteria for permitted use are found in the private nature of the performance.

In the paper society, we thus see that there are various forms of exploitation, various collective legal relations, and various intermediaries for various types of work. We discern reproduction markets and performance markets with corresponding reproduction and performance rights. However, the electronic era will dramatically change this structure.

2. The Electronic Sieve

Users began to reproduce works in which the copyright was expired or which were freely available, by means of a combination of old technology, with which information is recorded onto material information carriers, and new chemical and electromagnetic reproduction techniques. Photocopying machines produced paper

5. European Court of Justice, Judgement of 18 March 1980, Case 62/79, *Coditel v. Ciné-Vog I*, (1980) ECR 881, recital 12.

copies of paper information carriers. Sounds and images that were communicated to the public by playing video or audio tapes in studios, and subsequently broadcast by means of (ether or cable) radio and/or television links, were recorded with video or audio recorders and copied onto magnetic tape. The spoken words, images and sound of the copyrighted work started to 'drain away' through the copying equipment of users and intermediaries. Thus, the *electronic sieve* was born, even though the drops that fell through the sieve still condensed into material information carriers.

This development has put pressure on free private use. A legal decision illustrating this development is the *Betamax* case in the United States on 'home taping' of television programmes.[6] Applying the American fair use principle, the final decision favoured the consumer. The private use of paper information carriers was put under pressure as well. Photocopying a paper information carrier was limited to making a few copies for study purposes and private use (cf. article 16b of the Dutch Copyright Act), but that was not all. As it became possible to produce photocopies of paper information carriers on a large scale, it became necessary to establish an intermediary, similar to collecting societies for musical performances. In the Netherlands, this intermediary became the 'Stichting Reprorecht', the Dutch reprographic rights organization, which was given the task of tracing all individual acts of photocopying not covered by allowed private use, that occurred within a certain time period, collecting fees from users and distributing the proceeds to the rightholders. This was, of course, an impossible task: counting the drops.

It is now time to bring up some questions concerning the reprographic right. Isn't it strange that a collection agency is established to collect fees for the use of copies in which the copyright is exhausted? Does the exhaustion principle still apply in that case, or rather: is there really any difference between a work that exists in itself and a work that exists through performance only? Isn't it strange that private copying is restricted, while the private use of a copy of the work is still allowed? Have we become confused by the fact that the performance of the paper work yielded just as many paper 'reproductions', because we have learnt to think along the lines of that concept in copyright terms? Couldn't a photocopy simply be a performance of the work? But let's leave these questions for a while and concentrate on the development of the sieve for now.

The emergence of the computer marks the beginning of the end for the paper information carrier, or rather the emergence of a new, electronic information carrier that will eventually take over most of the function of the paper information carrier. Thus, copyright is faced with the question of how this information processor is to be incorporated into the law. From the point of view of exploitation, the question is whether the processing of information in a machine (which is, in point of fact, a process of constant electronic copying) is to be considered reproduction. Under the European Software Directive[7] merely 'technical' acts of reproduction are considered restricted acts of exploitation.[8] With respect to phono

6. *Sony Corp. of America v. Universal Studios Inc.*, 464 US 417 (1984).

7. Council Directive 91/250, O.J.EC L 122/42 of 14 May 1991.

8. *Cf.* E.J. Dommering, 'Reverse Engineering: a software puzzle', in: H.W.K. Kaspersen and A. Oskamp (eds.), *Amongst Friends in Computers and Law*, Deventer/Boston, 1990, 32; Spoor-Verkade, *supra* note 4, 102.

records or CDs this is a new development; as far as I know, the mechanical copying acts taking place when these are played have never resulted in a debate on principles. Thus we have basically abandoned the principle of free private use.

Paper is no longer required to record information in or outside a computer. The computer contains a hard disk internally; a floppy disk externally. The information can be retrieved on screen an unlimited number of times. A hard copy is only one of the many different ways the stored information can be made visible. The difference between original and copy becomes blurred, because the information (in the form of bits) can be manipulated without restrictions. The drops entering the sieve have fallen from a large cloud, condense briefly and immediately evaporate into a new cloud.

A second phase in this development (which we are in the middle of) is the connection of computers to a network through which information can be transmitted over long distances (world-wide, e.g. the Internet). Thus the information made available in a publicly accessible computer can be consulted and copied from anywhere in the world. This is sometimes referred to as *electronic document delivery*. Is this in any way related to the old-fashioned method of copying? This question was thoroughly discussed during the (failed) amendment of the reprography provisions of the Dutch Copyright Act.[9] Urged on by publishers, the 'electronic copy' was to be excluded from the reprographic right. Interestingly, the advocates of this measure continued to think in terms of paper information carriers:

> 'It presents new and serious threats for printed publication as a source, threats that are difficult to keep track of. The regular exploitation of written documents, as protected under article 9 of the Berne Convention could suffer from this development.'[10]

With the virtual disappearance of paper information carriers (which have become by-products), we have to repeat the previous question in a rhetorical sense. Hasn't the distinction between work that exist in themselves (and can be copied) and works that exist only in their being performed (and can be performed for an unlimited number of times) become obsolete? Doesn't the merger of images, words and sounds on a digital level (all zeroes and ones – with images containing more zeroes and ones than text) have ramifications for our concept of exploitation?

My answer this question is *yes* – but that was already implicit in the rhetoric. What is the difference between the 'playability' of music on a CD and the 'retrievability' on screen of a text on a diskette? Even for the proponents of other solutions for the electronic copy in copyright law, the paper spectre continues to play a role: they continue to speak in terms of pages of originals, and electrocopies

9. Copyright Amendment Bill, Kamerstukken 22600; the bill was eventually rejected by the First Chamber of Parliament.

10. N. van Lingen, 'Reprorecht in revisie' (Reprographic right under revision), *Informatierecht/AMI* 1993, 132-133; *see also* M.J. Frequin, 'De ontwikkelingen van de informatietechnologie en het reprorecht' (Developments in information technology and reprographic right), *Computerrecht* 1993, 97.

and electronic copying.[11] Has the thought ever occurred to us to consider the projection of a film on our television screen as an electrocopy of a film image of a rotating film reel that is being broadcast at that same moment? Or: has the thought ever occurred to us to find the basis for compensation for the airing of a film in the number of 'electrocopied' images?

In my opinion, multimedia thinking means that, for copyright, we must abandon the distinction between *performance* and *reproduction* as principally distinct categories. As far as computer networks are concerned, we must start to think in terms of the performance of stored information: in image, sound or text. This primarily means that we must abandon 'repro-thinking' as outdated paper-thinking.[12] I will try to explain some of the consequences of this process in the final part of this paper.

3. The Electronic Sieve: New Relations

3.1 EXPLOITATION CONCEPTS FOR NETWORKS

Approaching the network not from the perspective of the paper information carrier ('repro-thinking'), but in terms of '(electronic) performance', it is only logical to explore the legal development of radio and television. After all, this is an electronic network with which copyright has long-standing experience, and which copyright law and doctrine have considered in terms of performance from the very beginning.

There are a number of phases in that development. The first phase concerns the performance of works transmitted by radio or television. Under article 11bis of the Berne Convention these are considered as new communications to the public by the original broadcaster and everything that is considered to be part of it (the *organisme d'origine*). Copyright fees are settled with the original transmitting parties (the broadcasting organizations). Because of the 'lighthouse effect' that occurs when distribution is diffuse (the beam of light from the lighthouse that, in classical treatises on law and economics, is presented as the collective good that cannot be exclusively exploited), broadcasting corporations cannot pass on the copyright costs to individuals. As often occurs with payment of collective goods, we have therefore opted for a *fiscal* solution: a levy for the individual user, the radio and television licence fee.

As regards the user, the question of whether the audio or video presentation of a programme using a private receiving station yielded a new copyright-relevant

11. D.J.G. Visser, 'De elektronische kopie en het reprorecht' (The electronic copy and the reprographic right), *Computerrecht* 1993, 7; Thomas K. Dreier, 'Copyright in the age of electrocopying', *Informatierecht/AMI* 1994, 3.

12. Cf. the 'diffusion right' for point-to-(multi)point transmissions mentioned by Nicholas Higham, 'The new challenges of digitisation', 10 *EIPR* 1993, 356; see also Paul Geller, 'The Universal Electronic Archive: Issues in International Copyright', 25 *IIC* 54, 58.

performance was answered on the basis of the criterion of whether that performance took place *in private*.[13]

Subsequently, new networks appeared on the horizon: *cable systems*. These networks were linked to the wireless broadcasting network. With regard to a cable network retransmitting broadcast programmes, the question was raised whether the network belonged to the *organisme d'origine*. Like many other courts in Europe, the Dutch Supreme Court ('Hoge Raad') answered this question in the negative.[14] This decision led to a system of collective licenses for secondary exploitation acts. This was made possible by the fact that two opposing parties could be identified: the broadcasters and music collecting societies on the one side, organized cable operators on the other side, who could charge the costs to their subscribers. Here, too, the question of the private circle was raised. Did this rule also apply to small cable networks, having less than 100 subscribers? In the opinion of the Dutch Supreme Court, the existing legal framework (article 12 of the Dutch Copyright Act) was insufficient. The Court referred the case to the legislator for a regulatory solution, if necessary by means of a *compulsory licence* to be based on article 17a of the Dutch Copyright Act.[15]

The next step was that technology enabled the settlement of fees for services with users individually: subscription television. This *technological* solution still has a *collective* character, because subscribers subscribe to an entire package of programmes, which they receive in the form of coded signals that are decoded in the home. Subscribers pay a fixed monthly sum to purchase the encoded package. New technical measures in the network will eventually allow *pay per view* in the near future.

The final phase in this development is the installation of a world-wide super-network in the form of satellite systems superimposed on the ether and cable networks. For this the European Union has opted for a so-called *injection right*: the injection of the programmes into the satellite system is considered to be the only relevant act of communication.[16]

As may be clear from the above, the electronic broadcasting network employs a combined approach towards exploitation rights. Settlement based on secondary exploitation rights by means of collective or individual licences is but one of the solutions, that will only be opted for when there are well-defined exploitation moments and identifiable parties. This demonstrates how one-sidedly the problem of information network exploitation is approached. Thinking in terms of putting books into computers, people persist in the notion of secondary exploitation acts related to (pages of) books, rendering the exploitation of a network more and more difficult and expensive. This repro-thinking should make way for network-thinking.

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13. Hoge Raad (Supreme Court of the Netherlands), Judgement of 6 May 1938, *NJ* 1938, 635.
14. Hoge Raad (Supreme Court of the Netherlands), Judgement of 30 October 1981, *NJ* 1982, 435.
15. Hoge Raad (Supreme Court of the Netherlands), Judgement of 24 December 1993, *Informatierecht/AMI* 1994, 66.
16. Cf. P.B. Hugenholtz, 'De Europese richtlijn inzake satellietomroep en kabeldoorgifte' (The European Directive on satellite broadcasting and cable transmission), *Informatierecht/AMI* 1994, 87-90.

In this shift to network-thinking, we should not forget that an information network is different from a broadcasting network. The exploitation of a broadcasting network is a form of centralized editing and dissemination of information to homogenous audiences. The exploitation of a multimedia network is much more complex because heterogenous users purchase different amounts and different kinds of information at different times. A wide variety of networks (variety in terms of technology, target groups and information services) is linked together. The borderline between private and public use within the network is even more difficult to determine than for broadcasting.

This only goes to show how important it is that we search for a mix of exploitation modalities, depending on social and technical possibilities. Licensing electrocopies is not the most appropriate solution, because drops of water cannot be counted, and evaporate. A technological solution that allows individualized usage by means of encryption techniques (applied in the stored information, in accessing to data bases, in transmitting) could become of paramount importance. Copyright might become part of a complicated telecommunications accounting system. Some envisage a future in which the consumer will pay for all his multimedia services (i.e. for the transmission and use of the information) through a monthly account, much as we do now for gas and electricity.

This new and more complex situation will result in different alliances and actors, and new ways of allocating of rights and pricing.

3.2 NEW ALLIANCES, NEW WAYS OF ALLOCATING RIGHTS

In the previous paragraphs I have briefly discussed how the different forms of exploitation of the different categories of works result in differing players in the field. The multimedia development of public networks stimulates the formation of combinations of telecommunications, media and cable companies in an attempt to gain control of the entire package to supply *video on demand* services to users. Similar developments are involved where the formation of information networks is concerned. Publishers will also start organizing themselves on a multimedia level in order to control multimedia exploitation rights: in traditional books, CD-ROMs, electronic data banks, paper and electronic magazines, etc.

The question remains whether other players on the market will agree to this. After all, the new intermediaries are data banks who, in giving access to information on the network, will carry out as important a 'performance' task as the theatre and film producers of the past. And will the universities that have the information produced take a passive stance in the new situation? I don't think so: they will continue to wonder what price they themselves have paid for the production of information, and what price the publishers are paying for it. And we should not forget that governments are also producing more and more exploitable information. Governments are starting to take an entrepreneurial viewpoint towards their own products; they want to be paid for them.

It is conceivable, therefore, that we will see a new power struggle over the allocation of rights, in which the producers of knowledge try to obtain rights, either by way of employers' copyrights or otherwise. The same holds true for

intermediaries like libraries. The more added value their intermediary function generates, and the more they are bogged down by all the secondary exploitation rights publishers throw at them, the more consideration they will give to their position of power in the process of information provision.

It is also high time that authors start thinking about whom they will assign which electronic performance rights and at what price, and in what constellation they will have the best negotiating position. Publishers will reconsider their past and present position. As usually happens when a revolution in market relations occurs as a result of economic and technological transformation, vertical integration cannot be ruled out. This is illustrated by the purchase of cinema chains in the film industry, or in the book trade. This development is sometimes followed by separation spurred on by the need for independent intermediaries. The separation of the printed press and publishers has been partly completed; once this new product cycle is started, will information producers or publishers and telecommunications and information companies become involved in the same integration process as is currently developing in the film industry?

And what will be the position of the collecting societies? Should pay per use and individual repartition become a reality, will we still need collecting societies with exclusive rights? Wouldn't it be more efficient when agencies on a competitive basis or right owners would take over the role of these intermediaries?

3.3 PRICE AND FREE USE

Multimedia exploitation rights involve a different pricing system than rights to works exploited through a single medium. Just like the legal regulations of the old medium can, ultimately, not be transformed to the electronic network simply because the information is entered into the network as text, image or sound, it is important that the pricing rules for the old media be abandoned. Broadcasting companies take the size of the public to which the network is accessible as a criterion (cable operators, for instance, pay in accordance with the number of subscribers). A similar system could be used for text, possibly in combination with collective subscription and *pay per use* systems.

I have no cut-and-dried answers at this stage. All I want to do is point out that the entire pricing system must be reviewed and that electrocopying is a notion that must be abandoned. The multimedia network requires a different approach and the development of new criteria for free use. After all, the object of copyright is not only to protect the author's intellectual efforts, but also the distribution of knowledge. One of the serious threats of the new technology is that it could give to the right owners a dominant position to control the flow of information from the input in the databases, through the network to the site of the end users.

4. Conclusion: the Electronic Tower of Babel

The electronic network not only confronts us with problems concerning copyright and the economy of this new medium, it is also linked with questions concerning privacy and freedom of expression. Paul Geller distinguishes between three different legal levels of protection in that network:[17] privacy rights at the basic level, contract rights at the second level, and copyright at the third level. In my view these are conflicting claims: copyright would benefit from *pay per use* systems, but this may conflict with the privacy claims aimed at anonymity of the individual user. Centralized control over reproduction and performance also conflicts with the right of freedom of expression. This might mean level upon level of protection, so that encryption codes will not reveal the identity of individuals. And too much encryption, in turn, conflicts with the government's wish to monitor a suspected offence. The multimedia network calls for an integral approach so that problems of copyright, privacy and freedom of expression are addressed at the same time. The electronic highway should be governed by *information law*.[18]

It is not just that the electronic network will consist of a labyrinth of secret languages for reasons of legal protection, it also is a melting pot of nationalities. What national law will apply to these information relations? The law of the electronic highway has to be international. In short, it is a grand and extremely complicated construction. Will the electronic highway end up as the tower of Babel, which could not be completed; not due to a lack of technical ingenuity, but due to a confusion of tongues? And what is more: will cyberspace be as enlightened a society as the Republic of Letters of the 18th century that invented copyright and freedom of expression?[19]

17. Geller, *supra* note 12, 60.
18. See Egbert Dommering, 'An Introduction to Information Law', in: Egbert J. Dommering and P. Bernt Hugenholtz (eds.), *Protecting Works of Fact*, Deventer/Boston, 1991, 10.
19. *See* Paul Geller, 'Copyright between Market Place and Authorship', in Brad Sherman and Alain Strowel (eds.), *Of Authors and Origins*, Oxford, 1994, 161, 164.

The Economics of Emergent Property Rights on the Internet

*Ejan Mackaay**

1. Introduction

'Everything you know about intellectual property is wrong.' John Perry Barlow wrote this in the March 1994 issue of *Wired.* [1] Intellectual property rights on the Internet were, in his eyes, a return to the 'Bad Old Days of property,' being 'the divine right of thugs'.[2] In the same breath, Barlow invited everyone to come and dance 'on the grave of copyright and patent'. To which, not quite a year later, Lance Rose replied, '(..) copyright is dead. Long live copyright'.[3]

Barlow's message is reminiscent of that propounded by economists who see intellectual property rights, patents in particular, as arbitrary privileges or monopolies granted by government.[4] On that view, such privileges distort incentives to innovate rather than correct supposed deficiencies of the unaided market process. Intellectual property rights amount to taxi permits.

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1. Barlow, John Perry, 'The Economy of Ideas – A framework for rethinking patents and copyrights in the Digital Age (Everything you know about intellectual property is wrong)', (1994) 2.03 *Wired* 84-90, 126-129, reprinted elsewhere in this book, 169-187. The message has been echoed recently in Dyson, Esther, 'Intellectual Value', (1995) 3.07 *Wired* 136-141, 182-184.

2. *See supra* note 1.

3. Rose, Lance, 'The Emperor's Clothes Still Fit Just Fine – Or, copyright is dead. Long live copyright', (1995) 3.02 *Wired* 103-106.

4. Plant, Arnold, 'The economic theory concerning patents for inventing', 1934 *Economica*, repr. in Plant, Arnold (ed.), *Selected Economic Essays and Addresses*, London, 1974, 35-56; Rothbard, Murray N., *Power and Market – Government and the Economy*, Kansas City, 1977, (2d ed.), 71-75; Rothbard, Murray N., *Man, Economy and State – A Treatise on Economic Principles*, Auburn, 1993, (2d ed.), 652-660; Palmer, Tom G., 'Intellectual Property: A Non-Posnerian Law and Economics Approach', (1989) 12 *Hamline Law Review* 261-304; Palmer, Tom G., 'Are Patents and Copyrights Morally Justified? The Philosophy of Property Rights and Ideal Objects', (1990) 13 *Harvard Journal of Law and Public Policy* 817-865; Lepage, Henri, 'Les brevets dans la stratégie des entreprises: le cas français', (1989) 1 *Journal des économistes et des études humaines* 153-177; Lepage, Henri, 'Propriété industrielle, propriété intellectuelle et théorie de propriété', in: *La 'nouvelle économie' industrielle,* Henri Lepage (ed.), Paris, 1989, 153-177; Bouckaert, Boudewijn, 'What is Property?', (1990) 13 *Harvard Journal of Law and Public Policy* 775-816 and Bouckaert, Boudewijn, 'Repliek op Mackaay', in: *De sociaal economische rol van intellectuele rechten,* M. Van Hoecke (ed.), Brussels 1991, 31-37, at 33-35, a reply to Mackaay, Ejan, 'Economisch-filosofische aspecten van de intellectuele rechten', in: *De sociaal economische rol van intellectuele rechten,* in same, 1-30.

Barlow's point, I take it, is that one cannot realistically hope to control information flows on the net, as copyright would require. Attempts to control it go against the grain of the phenomenon: information works best hopping from mind to mind, being adapted in the process; the Internet provides such free flow in spades; attempts to reward information creators by controlling the information flow in traditional ways (intellectual property rights) will make havoc of the creative processes and ordinary freedoms of the creators.

Full scale enforcement of intellectual property rights will trespass on people's fundamental rights in their person and material goods. To prevent illegal copying, for instance, one would have to exercise wide surveillance powers and regularly burst into people's homes and other private spaces. To realise just how far this might go, consider the entirely judicial creation of the *Anton Piller order*: wide ranging search powers granted on the basis of *ex parte* proceedings.[5] And was not the *Electronic Frontier Foundation* created to defend people against such practices, spiced up with a touch of nationality security concerns?

The end of property? Scarcely. To see why not, one must look at the essential features of property rights and not remain fixated on the specific forms in which they have been cast at particular times in history, as in the Napoleonic codification of 1804 or the first copyright acts. Property rights come in many forms. New forms are continually being developed. What we are really interested in is at whose initiative new rights emerge, what is required for such a development, what we are likely to observe while the process is going on, and finally, how this translates into written law. A dynamic view of the economics of property rights.[6]

2. Property Rights: the Statics

2.1 PROPERTY RIGHTS AND LAW

Property rights have existed during all of recorded history of mankind. Bentham was surely right in observing that '[p]roperty and law were born together, and would die together'.[7] Game theory allows one to understand how these rights could

5. *Anton Piller K.G.* v. *Manufacturing Processes Ltd.*, [1976] 1 All E. R. 779 (C.A.); *Rank Film Distributors Ltd and others* v. *Videa Information Centre*, [1981] 2 All. E. R. 76 (H. L.).

6. A dynamic perspective on property rights is explicitly adopted in Libecap, Gary D., *Contracting for Property Rights*, Cambridge, 1989; Ellickson, Robert C., *Order without Law – How Neighbors Settle Disputes*, Boston, 1991; Knight, Jack, *Institutions and Social Conflict*, Cambridge, 1992; Merges, Robert P., 'Of Property Rules, Coase, and Intellectual Property', (1994) 94 *Columbia Law Review* 2655-2673; Riker, William H. and David L. Weimer, The Economic and Political Liberalization of Socialism: The Fundamental Problem of Property Rights, in: *Liberalism and the Economic Order*, Ellen Frankel Paul, Fred D. Miller Jr and Jeffrey Paul (eds), Cambridge, 1993, 79-102, in particular 90-99 and in some of my earlier work: 'Problématique' and 'La propriété est-elle en voie d'extinction?' in: *Nouvelles technologies et propriété*, textes présentés par Ejan Mackaay, Montréal, 1991, 1-4 and 217-247. The classic piece on the subject is Demsetz, Harold, 'Towards a Theory of Property Rights', (1967) 57 *American Economic Review* 347-373.

7. Frankel Paul, Ellen, *Property Rights and Eminent Domain*, New Brunswick, 1987, 212, quoting Bentham, *Theory of Legislation*, Oxford, 1914, 146-147.

be discovered in all regions around the globe, in very different cultures and very early in history.[8]

Property rights are the institution normally chosen by default for managing resources that have become scarce. Scarcity arises where, for resources that hitherto could be used without restriction and were in that sense abundant, new uses are invented and one must decide which use should prevail. Such competing uses may give rise to conflict. The conflict signals emerging scarcity of the resource in question. It may be solved, or altogether avoided, by defining property rights over that resource. Property rights attribute the decision about the use of a resource to a particular person or group of persons.[9]

Property rights are an essential element in a legal system supporting a market economy.[10] Economic historians have amply shown the deleterious effects of incompletely defining property rights or tinkering with them.[11] Property rights, according to economic theory, provide the incentives to husband scarce resources wisely and to develop new and better uses for them. When transferable, as they are in most instances, property rights drive the price mechanism, from which market participants draw clues to discover opportunities for exchange and profit.[12]

The legal structures securing these advantages do not necessarily go by the name of property rights in the sense of the Civil Code. Indeed, wherever someone has the more or less exclusive control over some resource, allowing him or her to decide what to do with it and to collect the gains or suffer the losses resulting therefrom, he or she has, to all intents, a property right in the broad sense

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8. Axelrod, Robert, *The evolution of cooperation*, New York 1984; Hargreaves Heap, Shaun P. and Yanis Varoufakis, *Game Theory – A Critical Introduction*, London, 1995; Mackaay, Ejan, 'L'ordre spontané comme fondement du droit – un survol des modèles de l'émergence des règles dans la société civile', (1988) 22 *Revue juridique Thémis* 347-383, and (1989) 3 *Revue internationale de droit économique* 247-287; Mackaay, Ejan, 'Le droit saisi par le jeu', (1991) *Droit et Société* 57-81, and in: *Le jeu: un paradigme pour le droit,* François Ost and Michel van de Kerhove (eds), Paris, 1992, 81-110; Sugden, Robert, *The economics of rights, co-operation & welfare*, Oxford, 1986; Taylor, Michael, *Community, anarchy & liberty*, Cambridge, 1982; Taylor, Michael, *The possibility of co-operation*, Cambridge, 1987.

9. Plentiful resources are usually held in common and are open to all. As scarcity sets in, rules about usage of the common good may be adopted. As scarcity becomes more severe, one may move to individual ownership or to stick with common ownership but strictly regulate its use. On the stages of this development in the case of water rights, *see* Rose, Carol M., 'Energy and Efficiency in the Realignment of Common Law Water Rights', (1990) 19 *Journal of Legal Studies* 261-296, at 294-96; also Rose, Carol M., *Property and Persuasion – Essays on the History, Theory and Rhetoric of Ownership*, Boulder, 1995.

10. Epstein, Richard A., *Simple Rules for a Complex World*, Cambridge, Mass., 1995, ch. 3. Property rights are one of the six basic principles underlying a mature legal system.

11. *See* e.g. North, Douglas C. and Robert Paul Thomas, *The Rise of the Western World – A New Economic History*, Cambridge, 1973; North, Douglas C., *Structure and Change in Economic History*, New York, 1981; Rosenberg, Nathan and L.E. Birdzell Jr, *How the West Grew Rich – The Economic Transformation of the Industrial World*, New York, 1986; Baechler, Jean, *Le capitalisme – 1. Les origines*, and *2. L'économie capitaliste*, Paris, 1995.

12. *See* for instance Barzel, Yoram, *Economic Analysis of Property Rights*, Cambridge, 1989; Mackaay, Ejan, 'An economic view of information law,' in: Korthals Altes, Willem F., Egbert J. Dommering, P. Bernt Hugenholtz and Jan J.C. Kabel (eds), *Information Law towards the 21st Century*, Deventer, 1992, 43-65, 48-54.

economists give to the term, whatever its legal name.[13] Transferability enhances the economic functions of such rights.

The prerequisite for property rights is a reasonable measure of exclusive control. Where this condition cannot be met and the resource is nonetheless scarce – given to multiple competing uses – we frequently see problems. Witness the difficulties in managing environmental resources or fish stock, to mention two current examples.[14] In such cases, other institutions are pressed into service for managing the conflict that signals scarcity: violence, authority, queuing, lotteries, nepotism. Or the resource may continue to be held in common property, with strict rules about how and how much each interested person may use it.[15]

2.2 FENCES

On the nature and role of fences

In the case of land, exclusive control is typically secured by means of a fence. Fences of some sort – they may be ditches – are a necessary and normally also sufficient condition for creating property rights. New fencing techniques make new property rights viable or old ones more viable. They may give rise to striking improvements in the use of scarce resources. Consider, by way of example, the spectacular success of the invention of barbed wire for cattle breeding in the American West.[16]

Fences may be physical stops. In the world of software, copy protection and encryption are such fences. But fences need not be physical stops. A contractual

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13. A different term, that could not be confounded with the legal concept, would have been better. But there appears to be no going back. *See* Barzel, *supra* note 12, at xi.

14. *See* for instance Block, Walter E. (ed.), *Economics and the Environment – A reconciliation*, Vancouver, 1990; Anderson, Terry L. and Donald R. Leal, *Free Market Environmentalism*, San Francisco, 1991.

15. Epstein studies such common property regimes for water rights: Epstein, Richard A., 'On the optimal mix of private and common property', in: *Property Rights*, Ellen Frankel Paul, Fred D. Miller Jr and Jeffrey Paul (eds), Cambridge, 1994, 17-41. On water rights, *see* also Rose, Carol M., 'Energy and Efficiency in the Realignment of Common Law Water Rights', (1990) 19 *Journal of Legal Studies* 261-296, at 294-96; Anderson, Terry L. (ed.), *Water Rights: Scarce Resource Allocation, Bureaucracy, and the Environment*, San Francisco, 1983. Other work, with a wealth of case studies and historical material, include Dahlman, Carl J., *The open field system and beyond*, Cambridge, 1980; Libecap, Gary D., *Contracting for Property Rights*, Cambridge, 1989; Ostrom, Elinor, *Governing the Commons – The evolution of institutions for collective action*, Cambridge,1990; Ellickson, *infra* note 16; Schmidtz, David, The institution of property, in: *Property Rights*, Ellen Frankel Paul, Fred D. Miller Jr and Jeffrey Paul (eds), Cambridge,1994, 42-62. These studies look into the question of comparing different institutions, attempting to explain in particular under what circumstances common property will be adopted as the most advantageous institution.

16. Ellickson, Robert C., *Order without Law – How Neighbors Settle Disputes*, Boston, 1991, 25. Ellickson, Robert C., 'Property in Land', (1993) 102 *Yale Law Journal* 1315-1400. At 1330, Ellickson relates how the invention of barbed wire changed the economics of land use for cattle breeding, making smaller lots viable. Historical observation confirmed what economic theory predicted here. *See* also Anderson, Terry L. and Donald R. Leal, *Free Market Environmentalism*, San Francisco, 1991, at 29.

arrangement by which one party gives the other access, under strict conditions, to a trade secret in his possession acts as a fence. Associations may be the depositaries of protected knowledge which they make available to members under strict rules. The association rules act as fences.[17] Generally '(..) institutions are enforcement technologies too, and they are often generated intentionally to reduce transaction costs and thus increase the value of assets'.[18] In the software world, updating policies restricted to registered users of legitimately acquired copies of the product act, to an extent and in conjunction with other measures, as a fence for it.[19] Legal sanctions, be they civil action to protect trade secrets or to halt 'parasitic activities', or criminal prosecution of 'pirates', or the threat of such actions, act as partial fences as well.

It will be helpful in what follows to use the term 'fences' for a wide range of devices and techniques and arrangements invented and used to secure some measure of exclusive control over a scarce resource. Fences seem to behave like other economic goods. Bringing new ones to the market is an entrepreneurial gamble. Existing fences may become obsolete when newer ones are put into service. To illustrate obsolescence, consider how the physical fence provided by the printing process in earlier days is cracking under the impact of photostatting and other copying techniques. To say that a property right is 'technologically dated' may mean merely that the fencing technique on which it relies is no longer as good as it once was.

How good is 'good enough' in fencing? We like to think that a fence shuts out hermetically. But this need not be so. A property right may be viable even where the fence is not fool proof.[20] The risk of burglary does not stop people from buying homes, although the risk of recurrent looting probably would. The 'holes in the fence', as well as the expense of activities (e.g. patrolling) designed to reduce losses due to what slips through those holes (pilferage), are simply costs to the owner. Property rights are worthwhile so long as they offer a net return over cost comparable to other possible investments. Closing a hole in the fence may be costlier than the losses it prevents.

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17. Marie-Angèle Hermitte relates how such an arrangement worked for plant breeding knowledge in France before the enactment, in 1970, of an intellectual property right on such knowledge. Marie-Angèle Hermitte, 'Histoires juridiques extravagantes – La reproduction végétale', in : *L'homme, la nature et le droit*, B. Edelman and M.-A. Hermitte (eds), Paris, 1988, 40-82. *See* also my 'Problématique,' in: *Nouvelles technologies et propriété*, Ejan Mackaay (ed.), Montréal, 1991, 1-4, 2, and 'Economic incentives in markets for information and innovation', (1990) 13 *Harvard Journal of Law and Public Policy* 867-909, 902.

18. Robert P. Merges, 'Of Property Rules, Coase, and Intellectual Property', (1994) 94 *Columbia Law Review* 2655-2673, 2679. He mentions several associations in the United States acting to define and protect informal rights of their members.

19. Lance Rose, *supra* note 3. Among the more obvious measures are surveillance and prosecutions organised by the Software Publishers Association, the Business Software Alliance and other similar groups.

20. [E]xclusivity is frequently a matter of degree.' Steven N.S. Cheung, 'The Structure of a Contract and the Theory of a Non-Exclusive Resource', (1970) 13 *J. Law Econ.* 49-70, repr. in: Eirik G. Furubotn and Svetozar Pejovich (eds), *The Economics of Property Rights*, Ballinger, 1974, 11-30, 27. Or as Lance Rose, *supra note 3*, puts it: 'Cops have plenty of experience in sweeping the public markets clean enough for business.'